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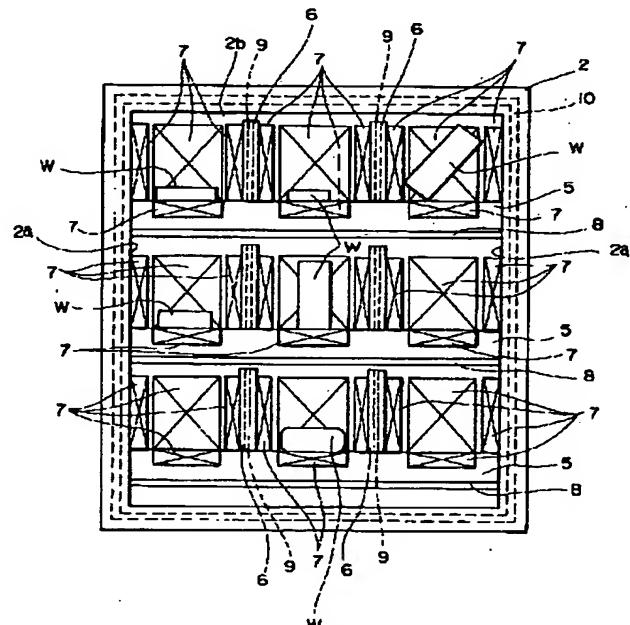
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(54)【発明の名称】 充電庫

(57)【要約】

【課題】 本発明は、多種多様な2次電池などの被充電物をハウジング内部に収容するだけで容易にかつ一度に多数充電できる充電庫を提供する。

【解決手段】 本発明に係る充電庫1は、一面側が開放した筐状のハウジング2と、ハウジング2の開放部分を閉鎖するよう支持された扉4とを具備している。ハウジング2内部には被充電物Wを載せる少なくとも1つの棚5が設けられ、棚5および/またはハウジング2には、棚5上および/または前記ハウジングの内底面上に置かれた被充電物Wに対し充電を行う充電器7が設けられている。充電器7は給電側コイル21を内蔵し、受電側コイル41および蓄電池70を内蔵した被充電物Wは、充電器7によって電磁誘導により非接触で電気を充電する。



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【特許請求の範囲】

【請求項1】 一面が開放した筐状のハウジングと、該ハウジングの開放部分を開閉するよう開閉可能に支持された扉とを具備し、前記ハウジング内部に被充電物を載せる少なくとも1つの棚を設け、前記棚および／または前記ハウジングには前記棚上および／または前記ハウジングの内底面上に置かれた被充電物に対し充電を行う充電器を設け、給電側コイルを内蔵した前記充電器によって受電側コイルおよび蓄電池を内蔵した前記被充電物に電磁誘導により非接触で電気を充電することを特徴とする充電庫。

【請求項2】 前記少なくとも1つの棚上および／または前記ハウジングの内底面上に、該棚および／または前記ハウジングの内底面を前記ハウジングの奥行き方向および／または該奥行き方向と交差する方向に仕切る少なくとも1つの起立した柵を設け、該柵によって仕切られた空間に前記被充電物を置くようにしたことを特徴とする請求項1記載の充電庫。

【請求項3】 前記充電器は、前記少なくとも1つの柵にも設けられていることを特徴とする請求項2記載の充電庫。

【請求項4】 前記ハウジングは、前記電磁誘導の際、発生する電磁波を外部から遮断するシールド体を具備していることを特徴とする請求項1記載の充電庫。

【請求項5】 前記少なくとも1つの柵に、当該柵の下方から前記電磁誘導の際、発生する電磁波を遮断するシールド体を設けていることを特徴とする請求項1記載の充電庫。

【請求項6】 前記少なくとも1つの柵に、当該柵に対し前記ハウジングの奥行き方向および／または該奥行き方向と交差する方向から前記電磁誘導の際、発生する電磁波を遮断するシールド体を設けていることを特徴とする請求項2記載の充電庫。

【請求項7】 前記被充電物が、電子機器に着脱可能に取り付けられる2次電池であって該電子機器から離脱された2次電池と、該2次電池に装着される前記受電側コイルを内蔵したアダプタとからなることを特徴とする請求項1記載の充電庫。

【請求項8】 前記被充電物が、電子機器に着脱可能に取り付けられる2次電池であって、前記受電側コイルを具備した2次電池であることを特徴とする請求項1記載の充電庫。

【請求項9】 前記被充電物が携帯型電子機器であることを特徴とする請求項1記載の充電庫。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、複数の2次電池等の被充電物を容易に充電可能とする充電庫に関する。

【0002】

【従来の技術】最近、携帯電話等の携帯型情報機器の発

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達により、電源として充電式の2次電池を備えた多種多様な小型電子機器が製品化され使用されている。これら電子機器は、ACアダプタなど充電器により家庭用の電源から電子機器に内蔵された充電回路を利用して電子機器内の2次電池を充電する方式とされている。

【発明が解決しようとする課題】しかし、これら2次電池の種類は多様であり、そのためACアダプタもそれぞれの機器専用のACアダプタが必要となり、一般家庭内に、多数のACアダプタがあることになり、いいかえればあふれるようになり、無駄が多い。

【0003】本発明は、かかる多くの充電器を排除し、多種多様な2次電池などの被充電物を複数、ハウジング内部に収容するだけで容易に充電できる充電庫を提供することを目的とする。

【0004】

【課題を解決するための手段】本発明に係る充電庫は、一面が開放した筐状のハウジングと、該ハウジングの開放部分を開閉するよう開閉可能に支持された扉とを具備し、前記ハウジング内部に被充電物を載せる少なくとも1つの棚を設け、前記棚および／または前記ハウジングには前記棚上および／または前記ハウジングの内底面上に置かれた被充電物に対し充電を行う充電器を設け、給電側コイルを内蔵した前記充電器によって受電側コイルおよび蓄電池を内蔵した前記被充電物に電磁誘導により非接触で電気を充電するものである。かかる充電庫によれば、多種多様な2次電池などの被充電物を複数、ハウジング内部に収容するだけで容易に充電できる。よって、各種電子機器の2次電池に専用の充電器を排除することができ、多くの専用充電器を大幅に少なくすることができる。また近時問題となっている資源の有効活用という点からも、本発明の充電庫の効用は大きい。

【0005】また本発明に係る充電庫において、前記少なくとも1つの棚上および／または前記ハウジングの内底面上に、該棚および／または前記ハウジングの内底面を前記ハウジングの奥行き方向および／または該奥行き方向と交差する方向に仕切る少なくとも1つの起立した柵を設け、該柵にて仕切られた空間に前記被充電物を置くようにしてもよい。このような充電庫では、充電庫内部に被充電物を置くことができる空間を確保することができ、より多くの被充電物を処理しうる。

【0006】本発明の充電庫においては、前記充電器を、前記柵にも設けてよい。このような充電庫では、被充電物に対し側面方向から近接した位置に充電器を設置できるので、高速充電を行いたいときなどに有用である。かかることから、充電器はすべての柵に設けてよいし、任意の柵に設けてその柵に囲まれた空間を高速充電用の領域としてもよい。

【0007】さらに本発明に係る充電庫において、前記ハウジングは、前記電磁誘導の際、発生する電磁波を外部から遮断するシールド体を具備しているのが好まし

い。かかるシールド体があれば、充電庫の周りにある他の電子機器に、充電庫内において発生する電磁波が悪い影響を及ぼすことを排除できる。

【0008】また、本発明に係る充電庫において、前記少なくとも1つの棚に、当該棚の下方から前記電磁誘導の際、発生する電磁波を遮断するシールド体を設けてよい。かかるシールド体により、当該棚の下方から来る電磁波を遮断できる。

【0009】さらにまた、本発明に係る充電庫において、前記少なくとも1つの棚に、当該棚に対し前記ハウジングの奥行き方向および／または該奥行き方向と交差する方向から前記電磁誘導の際、発生する電磁波を遮断するシールド体を設けてよい。かかるシールド体により、当該棚で囲まれた空間に隣接する空間から来る電磁波を遮断することができる。

【0010】本発明に係る充電庫にて使用される前記被充電物は、電子機器に着脱可能に取り付けられる2次電池であって該携帯型電子機器から離脱された2次電池と該2次電池に装着される受電側コイルを備えたアダプタとからなるものであることができる。このアダプタは、多種多様な2次電池に対応可能なものであることが望ましい。また被充電物は、電子機器に着脱可能に取り付けられる2次電池であって、受電側コイルを具備した2次電池であってもよい。このような被充電物を用いれば、本発明に係る充電庫自体を小型化することができる。

【0011】被充電物としては上記2次電池と上記アダプタの組み合わせ以外の携帯型電子機器自体でも可能である。この場合、携帯型電子機器へ及ぼす電磁波の悪い影響を排除するため、この電子機器の受電側コイルが配置されている外側部分だけを露出し、当該電子機器の他の外側部分をシールド体によって覆うことが望ましい。

【0012】

【発明の実施の形態】以下、本発明の実施の形態を図面に基づいて説明する。本発明の第1の実施の形態を示す図1ないし図4において、1は充電庫を示す。充電庫1は、図1に示すように、手前側の正面が開放した筐状のハウジング2と、ハウジング2の開放部分を開閉するよう開閉可能にヒンジ3で支持された扉4とを具備している。

【0013】図2および図3に示すように、ハウジング2内部には各種の被充電物Wを載せる棚5が3段設けられている。各棚5には、各棚5を横方向に仕切る複数の起立した柵6を設け、柵6にて仕切られた空間に各種の被充電物Wを置くようにしている。各棚5、ハウジング2の内側壁2a、内奥壁2bおよび各柵6には、棚5上に置かれた被充電物Wに4方から向き合って被充電物に対し充電を行う充電器7が設けられている。なお、図3中、2点鎖線にて示した充電器7は、ハウジング2の内側壁2aおよび内奥壁2bに設けられたものを示す。棚5および柵6には、その棚5の下方に位置する充電器

7から生じる電磁波からの悪影響、および柵6によって形成された空間に置かれた充電器7から生じる電磁波からの悪影響を排除する板状のシールド体8、9を設けている。なお、シールド体9は、各柵6中に埋入されている。

【0014】また、ハウジング2および扉4にも、図1および図2に示すように、ハウジング2内部、棚5、および柵6に設けた充電器7から発生する電磁波が充電庫1外部に悪影響を与えないよう、ハウジング2および扉4によって形成される内部空間を囲む板状のシールド体10、11を、ハウジング2および扉4のそれぞれの内部に埋入して設けている。

【0015】被充電物Wは、携帯型電子機器等の電子機器に着脱可能に取り付けられる2次電池であってこの電子機器から離脱された2次電池と、この2次電池に装着される受電側コイルを備えたアダプタとからなるものであることができる。このアダプタは、多種多様な2次電池に対応可能なものである。また被充電物Wは、携帯型電子機器自体でも可能である。この場合、携帯型電子機器へ及ぼす電磁波の悪い影響を排除するため、この電子機器の受電側コイルが配置されている外側部分だけを露出し、当該電子機器の他の外側部分をシールド体によって覆う。

【0016】充電器7は、被充電物W中の蓄電池の変動が生じても、給電側の電力を給電側の共振コイルから受電側の共振コイルへ電磁誘導により非接触で供給するものである。例えば図4に示すように、充電器7は、給電側の共振コイル21とこれに並列接続された共振コンデンサ22とを備する給電側の発振回路20を備えている。一方、被充電物Wが携帯型電子機器の場合はそれ自体が、また被充電物Wが2次電池とアダプタとの組み合わせたものからなる場合にはそのアダプタ自体が、充電側の共振コイル41とこれに並列接続された共振コンデンサ42とを備する受電側の共振回路40、整流平滑回路50および充電制御回路60を備えている。充電器7は、給電側コイル21と受電側コイル41の両方の磁束の影響を受けて発生する誘導起電力を検出する検出コイル23と、検出コイル23が検出した誘導起電力の周波数に応じて給電側コイル21に供給される電力を変化させて給電側の発信周波数を受電側の共振周波数に同調させる制御回路24を備えている。

【0017】制御回路24は、給電側コイル21に対し互いに逆方向の電流を与える第1のトランジスタ25および第2のトランジスタ26を備えている。第1のトランジスタ25と第2のトランジスタ26は、検出コイル23で検出した誘導起電力の極性の変化に応じて交互に給電側コイル21へ電流を与えるように切り換えられるものである。給電側の電源は直流電源27であり、この直流電源27からの電流が、第1のトランジスタ25および第2のトランジスタ26の切換動作により、給電

側コイル21に対して逆向きに交互に与えられる。さらに第1のトランジスタ25と第2のトランジスタ26との電流増幅率が相違し、第1のトランジスタ25と第2のトランジスタ26に直流電圧が与えられると、前記電流増幅率の高いトランジスタから給電側コイル21に電流が与えられて発振が開始される。なお、直流電源27は、家庭用または業務用の一般交流電源から直流に変換したものを電源としてもよい。

【0018】図4中、28は電源27と給電側コイル21の中性点との間にあるコイル、29は給電側コイル21の上端点および下端点に並列に接続されたコンデンサ、30および31は制御回路24を成す抵抗である。抵抗30はトランジスタ25のベースと電源27の正電極との間あり、抵抗31はトランジスタ26のベースと電源27の正電極との間にある。また図4中、70は2次電池である。

【0019】次に、本発明の第1の実施の形態に基づく被充電物の充電の仕方を説明する。まず、携帯型電子機器が図4に示すような受電側の共振回路40、整流平滑回路50、電流制御回路60を具備している場合は、この携帯電子機器自体を被充電物Wとし、充電庫1の扉4を開け、ハウジング2内の任意の棚5の上に、かつ棚6によって仕切られた空間に置く。これにより、被充電物Wの下側、両側および奥側に配置した充電器7から、その被充電物Wに合わせた共振周波数が図4に示した給電側の共振コイル21から発生する。これら共振周波数のうち適当な方向からの共振周波数に、被充電物Wの受電側の共振コイル41が同調し、共振コンデンサ42と共に受電し電磁エネルギーを直流の電気エネルギーに変換する。この電気エネルギーは、整流平滑回路50によって整流・平滑され、そして充電制御回路60によって充電するのに適した電圧に設定され、2次電池70に送られて、2次電池70が充電されることになる。

【0020】また、携帯型電子機器等の電子機器から2次電池を取り外し、その2次電池を充電する場合には、図4に示したような受電側の共振回路40、整流平滑回路50、電流制御回路60を具備したアダプタをこの2次電池に装着し、アダプタ付き2次電池を被充電物Wとして、充電庫1の扉4を開け、ハウジング2内の任意の棚5の上にかつ棚6で仕切られた空間に置く。その後は上述の充電方法に従い、この2次電池が充電される。

【0021】次に、本発明に係る充電庫の第2の実施の形態を図5に従い、説明する。第2の実施の形態である充電庫は、図1ないし図4に示した第1の実施の形態における棚の形状を変えたものであり、図1ないし図4に示した部材と同一部材には同一符号を付し、その説明を省略する。

【0022】図5に示すように、棚76が各棚5上に縦方向すなわちハウジング2の奥行き方向および横方向すなわちハウジング2の奥行き方向に直交する方向に起立

して形成されている。縦方向の棚76aおよび横方向の棚76bによって形成される各空間に、またはこれら棚とハウジングの内壁2aで形成される各空間に被充電物が置かれ、これら被充電物はその周りに置かれた適当な方向に配置されている充電器7により充電されるようになっている。したがって、第2の実施の形態では、充電器7は図5のように、縦方向の各棚76aに沿って、棚5、棚76a、およびハウジング2の内側壁に配設されているとともに、横方向の棚76bの扉側に対向する面およびハウジング2の内奥壁にも配設されている。なお、図5中、2点鎖線にて示した充電器7は、図3におけるハウジング2の内側壁2aおよび内奥壁2bと同様に設けられたものを示す。また各棚76a、76bには、図3に示したシールド体9が埋入されている。かかる第2の実施の形態である充電庫にあっては、被充電物が第1の実施の形態と同じ充電方法にて充電ことができ、充電庫内の内部空間を有効に使え、多くの被充電物を充電することができる。

【0023】さらに、本発明に係る充電庫の第3の実施の形態を図6に従い、説明する。第3の実施の形態である充電庫は、図1ないし図4に示した第1の実施の形態におけるハウジング2の内底面2cに充電器7を設けたものであり、図1ないし図4に示した部材と同一部材には同一符号を付し、以下ではその説明を省略する。この実施の形態は、ハウジング2の内底面2cに、図2および図3に示したような2個の棚6を起立して設け、この内底面2cを棚5の代わりに使用するものである。なお、内底面2cにつながる内側壁2aおよび内奥壁2bにも、上述の第1の実施の形態と同様に、充電器7が設けられている。このように構成すれば、ハウジング2の内部空間をさらに有効利用できる。また、棚6を設げず内底面自体に大型の充電器7を設けて、大型の電子機器を充電できるようにしてもよい。

【0024】

【発明の効果】本発明に係る充電庫は、ハウジングと、扉とを具備し、ハウジング内部に被充電物を載せる少なくとも1つの棚を設け、前記棚および/または前記ハウジングには前記棚上および/または前記ハウジングの内底面上に置かれた被充電物に対し充電を行う充電器を設け、給電側コイルを内蔵した前記充電器によって受電側コイルおよび蓄電池を内蔵した前記被充電物に電磁誘導により非接触で電気を充電するものである。かかる充電庫によれば、多種多様な2次電池などの被充電物を複数、ハウジング内部に収容するだけで容易に充電できるので、各種電子機器の2次電池に専用の充電器を排除することができ、多くの専用充電器を大幅に少なくすることができる。よって近時問題となっている資源の有効活用という点からも、本発明の充電庫の効用は大きい。

【図面の簡単な説明】

【図1】本発明に係る充電庫の第1の実施の形態を示す

斜視図。

【図2】図1に示した本発明に係る充電庫の扉を開けた状態を示す正面図。

【図3】図2に示した棚および柵を示す拡大斜視図。

【図4】図2に示した充電器および被充電物を示す回路図。

【図5】本発明の第2の実施の形態をなす棚と柵を示す斜視図。

【図6】本発明の第3の実施の形態をなすハウジングの下部を示す斜視断面図。

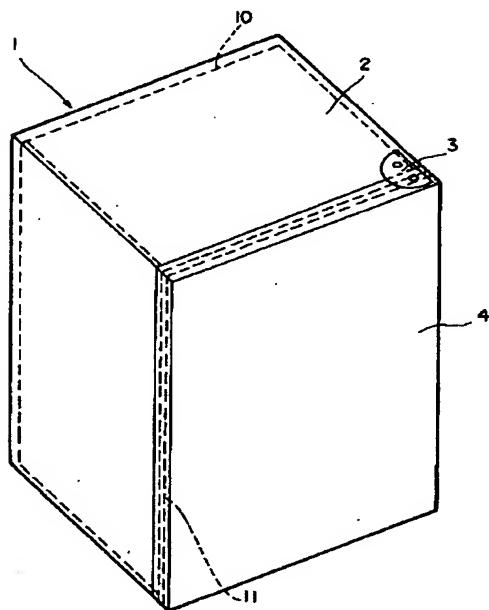
【符号の説明】

1 充電庫

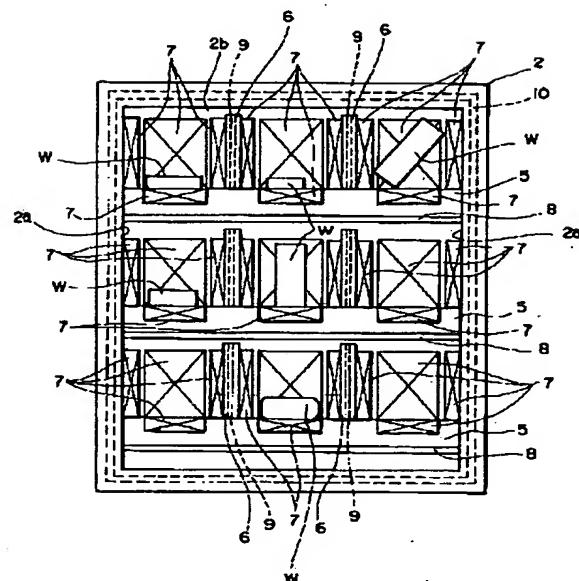
2 ハウジング

- 4 扉
- 5 棚
- 6 柵
- 7 充電器
- 8 棚中のシールド体
- 9 柵中のシールド体
- 10 ハウジング中のシールド体
- 11 扉中のシールド体
- 21 給電側コイル
- 41 受電側コイル
- 70 2次電池
- 76 柵

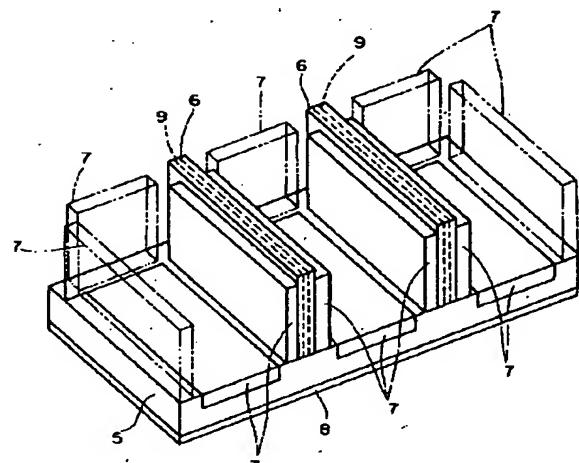
【図1】



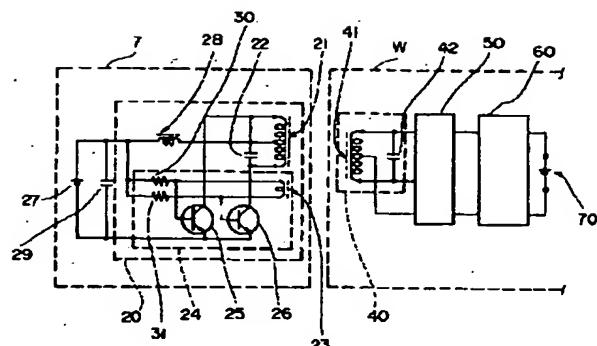
【図2】



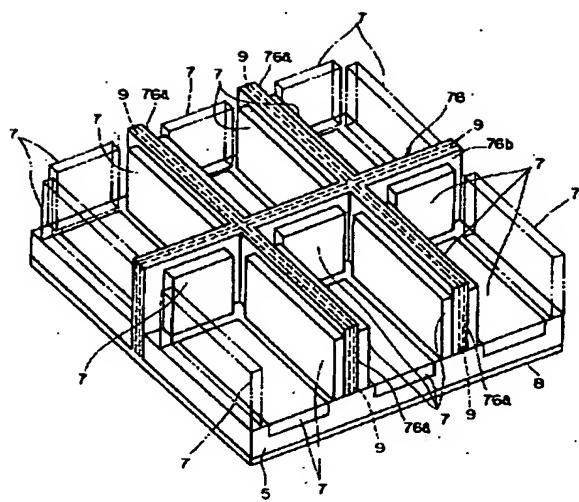
【図3】



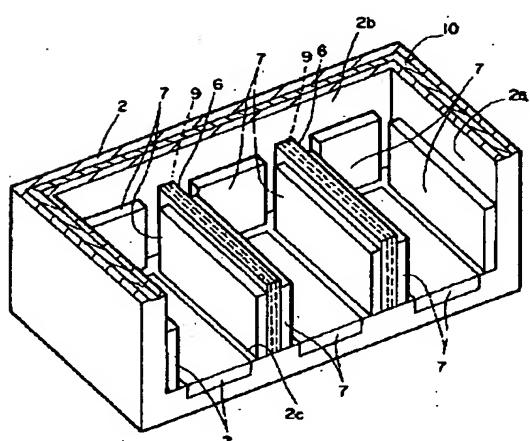
【図 4】



【図 5】



【図 6】



フロントページの続き

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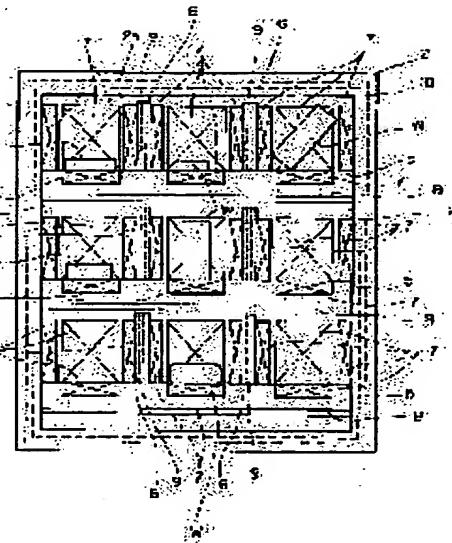
(21)Application number : 2001-354214 (71)Applicant : ALPS ELECTRIC CO LTD
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(54) CHARGING BOX

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a charging box which can easily charge objects to be charged like a variety of secondary cells at one time in large numbers.

SOLUTION: The charging box is composed of a box-shaped housing 2 of which, one side is open, and a door 4 supported so as to open and close an open side of the housing 2. At least one shelf 5 putting the object to be charged is arranged inside the housing 2, and a charging device 7 put on the bottom surface of the housing 2 and/or the shelf 5 and charging the object to be charged W is arranged to the housing 2 and/or the shelf 5. The charging device 7 has a power supply side coil 21 at its inside, and the object to be charged W having a power receiving side coil 41 and a storage battery 70 at its inside can be charged in a non-contact manner by the electromagnetic induction of the charging device 7.



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CLAIMS

[Claim(s)]

[Claim 1] Housing of the shape of ** which the whole surface opened, and the door supported possible [closing motion] so that the open part of this housing might be opened and closed are provided. At least one shelf which puts a charged object on the interior of said housing is formed. The battery charger which charges to the charged object placed on said shelving and/or the inner base of said housing is formed in said shelf and/or said housing. The charge warehouse characterized by charging the electrical and electric equipment by non-contact by electromagnetic induction at said charged object which contained the power receiving side coil and the battery with said battery charger having a feed side coil.

[Claim 2] said at least one shelving -- and/or, the charge warehouse according to claim 1 characterized by putting said charged object on the space which prepared at least one fence which divides this shelf and/or the inner base of said housing in the depth direction of said housing and/or this depth direction, and the crossing direction, and which stood up, and was divided by this fence on the inner base of said housing.

[Claim 3] Said battery charger is a charge warehouse according to claim 2 characterized by being prepared also in said at least one fence.

[Claim 4] Said housing is a charge warehouse according to claim 1 characterized by providing the shielding object which intercepts the electromagnetic wave to generate from the outside in the case of said electromagnetic induction.

[Claim 5] The charge warehouse according to claim 1 characterized by having established the shielding object which intercepts the electromagnetic wave to generate from the lower part of the shelf concerned at said at least one shelf in the case of said electromagnetic induction.

[Claim 6] The charge warehouse according to claim 2 characterized by having established the shielding object which intercepts the electromagnetic wave to generate to the fence concerned at said at least one fence in the case of said electromagnetic induction from the depth direction of said housing and/or this depth direction, and the crossing direction.

[Claim 7] The charge warehouse according to claim 1 which said charged object is the rechargeable battery attached in electronic equipment removable, and is characterized by consisting of a rechargeable battery which seceded from this electronic equipment, and an adapter having said power receiving side coil with which this rechargeable battery is equipped.

[Claim 8] The charge warehouse according to claim 1 characterized by for said charged object being the rechargeable battery attached in electronic equipment removable, and being a rechargeable battery possessing said power receiving side coil.

[Claim 9] The charge warehouse according to claim 1 characterized by said charged object being pocket mold electronic equipment.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the charge warehouse which enables charge of charged objects, such as two or more rechargeable batteries, easily.

[0002]

[Description of the Prior Art] Recently, the various small electronic equipment equipped with the rechargeable battery of a charge type as a power source is produced commercially and used by development of pocket mold information machines and equipment, such as a cellular phone. Let these electronic equipment be the methods which charge the rechargeable battery in electronic equipment using the charge circuit built in electronic equipment from the power source for home use with the AC adapter, i.e., a battery charger.

[Problem(s) to be Solved by the Invention] However, the class of these rechargeable batteries is various, therefore if the AC adapter only for each devices will be needed, an AC adapter will also have many AC adapters in general domestic and it puts it in another way, there is much futility in *****.

[0003] This invention eliminates the battery charger of these many, and aims at offering the charge warehouse which can be easily charged only by holding charged objects, such as various rechargeable batteries, in the interior of plurality and housing.

[0004]

[Means for Solving the Problem] The charge warehouse concerning this invention possesses housing of the shape of ** which the whole surface opened, and the door supported possible [closing motion] so that the open part of this housing might be opened and closed. At least one shelf which puts a charged object on the interior of said housing is formed. The battery charger which charges to the charged object placed on said shelving and/or the inner base of said housing is formed in said shelf and/or said housing. The electrical and electric equipment is charged by non-contact by electromagnetic induction at said charged object which contained the power receiving side coil and the battery with said battery charger having a feed side coil. According to this charge warehouse, it can charge easily only by holding charged objects, such as various rechargeable batteries, in the interior of plurality and housing.

Therefore, the battery charger of dedication can be eliminated to the rechargeable battery of various electronic equipment, and many exclusive battery chargers can be lessened substantially. Moreover, also from the point of effective use of the resource which poses a problem recently, the use of the charge warehouse of this invention is large.

[0005] Moreover, at least one fence which divides this shelf and/or the inner base of said housing in the depth direction of said housing and/or this depth direction, and the crossing direction and which stood up is prepared on said at least one shelving and/or inner base of said housing, and you may make it put said charged object on the space railed [this] off in the charge warehouse concerning this invention. In such a charge warehouse, the space which can put a charged object on the interior of a charge warehouse can be secured, and more charged objects can be processed.

[0006] In the charge warehouse of this invention, said battery charger may be formed also in said fence. Since a battery charger can be installed in the location which approached from the side face to the charged object, it is useful in such a charge warehouse to perform high-speed charge. It is good also considering the space which could form the battery charger in all fences, prepared in the fence of

arbitration from this thing, and was surrounded by the fence as a field for high-speed charge. [0007] As for said housing, in the charge warehouse furthermore applied to this invention, it is desirable in the case of said electromagnetic induction to provide the shielding object which intercepts the electromagnetic wave to generate from the outside. If there is this shielding object, the electromagnetic wave generated in a charge warehouse on other electronic equipment in the surroundings of a charge warehouse can eliminate doing bad effect.

[0008] Moreover, in the charge warehouse concerning this invention, the shielding object which intercepts the electromagnetic wave generated in the case of said electromagnetic induction may be prepared in said at least one shelf from the lower part of the shelf concerned. With this shielding object, the electromagnetic wave which comes from the lower part of the shelf concerned can be intercepted.

[0009] The shielding object which intercepts the electromagnetic wave to generate may be established further again in the case of said electromagnetic induction from the direction which intersects said at least one fence with the depth direction of said housing, and/or this depth direction to the fence concerned in the charge warehouse concerning this invention. The electromagnetic wave which comes from the space which adjoins the space surrounded with the fence concerned with this shielding object can be intercepted.

[0010] Said charged object used in the charge warehouse concerning this invention is a rechargeable battery attached in electronic equipment removable, and can consist of a rechargeable battery which seceded from this pocket mold electronic equipment, and an adapter equipped with the power receiving side coil with which this rechargeable battery is equipped. As for this adapter, it is desirable for it to be able to deal with various rechargeable batteries. Moreover, a charged object may be a rechargeable battery attached in electronic equipment removable, and may be a rechargeable battery possessing a power receiving side coil. If such a charged object is used, the charge warehouse concerning this invention itself can be miniaturized.

[0011] As a charged object, the pocket mold electronic equipment other than the combination of the above-mentioned rechargeable battery and the above-mentioned adapter itself is possible. In this case, in order to eliminate the bad effect of the electromagnetic wave done to pocket mold electronic equipment, it is desirable to expose only the lateral part by which the power receiving side coil of this electronic equipment is arranged, and to cover other lateral parts of the electronic equipment concerned with a shielding object.

[0012]

[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained based on a drawing. In drawing 1 thru/or drawing 4 which shows the gestalt of operation of the 1st of this invention, 1 shows a charge warehouse. The charge warehouse 1 possesses the housing 2 of the shape of ** which the transverse plane of a near side opened, and the door 4 supported with the hinge 3 possible [closing motion] so that the open part of housing 2 might be opened and closed, as shown in drawing 1 .

[0013] As shown in drawing 2 and drawing 3 , three steps of shelves 5 which carry various kinds of charged objects W are formed in the housing 2 interior. He forms the fence 6 to which the plurality which divides each shelf 5 into a longitudinal direction stood up on each shelf 5, and is trying to put various kinds of charged objects W on the space railed [6] off. The battery charger 7 which faces the charged object W placed on the shelf 5 from the methods of four, and charges to a charged object is formed in paries-medialis-orbitae 2a of each shelf 5 and housing 2, inner back wall 2b, and each fence 6. In addition, the battery charger 7 shown according to the two-dot chain line shows what was prepared in paries-medialis-orbitae 2a of housing 2, and inner back wall 2b among drawing 3 . The tabular shielding objects 8 and 9 which eliminate the adverse effect from the electromagnetic wave produced from the battery charger 7 located under the shelf 5 and the adverse effect from the electromagnetic wave produced from the battery charger 7 put on the space formed of the fence 6 are formed in the shelf 5 and the fence 6. In addition, the shielding object 9 is embedded into each fence 6.

[0014] Moreover, the tabular shielding objects 10 and 11 surrounding the building envelope formed of housing 2 and a door 4 are embedded and formed in each interior of housing 2 and a door 4 so that the electromagnetic wave generated from the housing 2 interior, a shelf 5, and the battery charger 7 formed in the fence 6 may not have an adverse effect on housing 2 and a door 4 to the charge warehouse 1 exterior, as shown in drawing 1 and drawing 2 .

[0015] The charged object W is a rechargeable battery attached in electronic equipment, such as pocket mold electronic equipment, removable, and can consist of a rechargeable battery which seceded from this electronic equipment, and an adapter equipped with the power receiving side coil with which this rechargeable battery is equipped. This adapter can respond to various rechargeable batteries. Moreover, the pocket mold electronic equipment itself is possible for the charged object W. In this case, only the lateral part by which the power receiving side coil of this electronic equipment is arranged in order to eliminate the bad effect of the electromagnetic wave done to pocket mold electronic equipment is exposed, and it is a wrap by the shielding object about other lateral parts of the electronic equipment concerned.

[0016] A battery charger 7 supplies the power by the side of feed to the resonance coil by the side of power receiving by non-contact by electromagnetic induction from the resonance coil by the side of feed, even if fluctuation of the battery in the charged object W arises. For example, as shown in drawing 4, the battery charger 7 possesses the oscillator circuit 20 by the side of feed possessing the resonant capacitor 22 by which parallel connection was carried out to the resonance coil 21 by the side of feed, and this. On the other hand, when the charged object W is pocket mold electronic equipment, itself possesses the resonance circuit 40, the rectification smoothing circuit 50, and the charge control circuit 60 by the side of the power receiving in which the adapter itself possesses the resonant capacitor 42 by which parallel connection was carried out to the resonance coil 41 by the side of charge, and this, when the charged object W consists of a combined thing of a rechargeable battery and an adapter again. The battery charger 7 possesses the control circuit 24 which changes the power supplied to the feed side coil 21 according to the frequency of the induced electromotive force which the feed side coil 21, the sensing coil 23 which detects the induced electromotive force generated in response to the effect of the magnetic flux of both power receiving side coils 41, and the sensing coil 23 detected, and aligns the dispatch frequency by the side of feed with the resonance frequency by the side of power receiving.

[0017] The control circuit 24 possesses the 1st transistor 25 and 2nd transistor 26 which give the current of hard flow mutually to the feed side coil 21. The 1st transistor 25 and 2nd transistor 26 are switched so that a current may be given to the feed side coil 21 by turns according to a polar change of the induced electromotive force detected with the sensing coil 23. The power sources by the side of feed are DC power supply 27, and the current from these DC power supply 27 is given to the reverse sense by turns to the feed side coil 21 by change-over actuation of 1st galvanized iron JISUTA 25 and the 2nd transistor 26. If the current amplification factor of the 1st transistor 25 and the 2nd transistor 26 is furthermore different and direct current voltage is given to the 1st transistor 25 and 2nd transistor 26, a current will be given to the feed side coil 21 from a transistor with said high current amplification factor, and an oscillation will be started. In addition, DC power supply 27 are good also considering what was changed into the direct current from for home use or business-use general AC power supply as a power source.

[0018] The coil which 28 have between a power source 27 and the neutral point of the feed side coil 21, the capacitor by which 29 was connected to juxtaposition at the upper bed point and soffit point of the feed side coil 21, and 30 and 31 are resistance which accomplishes a control circuit 24 among drawing 4. The **** between the base of a transistor 25 and the positive electrodes of a power source 27 has resistance 30, and resistance 31 has between the base of a transistor 26, and the positive electrode of a power source 27. Moreover, 70 are a rechargeable battery among drawing 4.

[0019] Next, the method of the charge of a charged object based on the gestalt of operation of the 1st of this invention is explained. first, the case where the resonance circuit 40 by the side of power receiving as pocket mold electronic equipment shows to drawing 4, the rectification smoothing circuit 50, and the current control circuit 60 are provided — this pocket electronic equipment itself — the charged object W — carrying out — the door 4 of the charge warehouse 1 — opening — the shelf 5 top of the arbitration in housing 2 — and it puts on the space divided by the fence 6. Thereby, the resonance frequency doubled with the charged object W from the battery charger 7 arranged to the charged object W bottom, both-sides, and back side occurs from the resonance coil 21 by the side of the feed shown in drawing 4. Among these resonance frequency, the resonance coil 41 by the side of the power receiving of the charged object W is aligned with resonance frequency from a suitable direction, transmitted electricity is received to it in collaboration with a resonant capacitor 42, and electromagnetic energy is changed into it at the electrical energy of a direct current. Smoothness is

carried out, and this electrical energy will be set as the electrical potential difference suitable for rectification and charging by the charge control circuit 60 by the rectification smoothing circuit 50, will be sent to a rechargeable battery 70, and a rechargeable battery 70 will be charged.

[0020] moreover, the adapter which possesses the resonance circuit 40 by the side of power receiving as shown in drawing 4, the rectification smoothing circuit 50, and the current control circuit 60 when a rechargeable battery is removed from electronic equipment, such as pocket mold electronic equipment, and that rechargeable battery is charged — this rechargeable battery — equipping — a rechargeable battery with an adapter — the charged object W — carrying out — the door 4 of the charge warehouse 1 — opening — the shelf 5 top of the arbitration in housing 2 — and it puts on the space railed [6] off. According to the above-mentioned charge approach, this rechargeable battery is charged after that.

[0021] Next, the gestalt of operation of the 2nd of the charge warehouse concerning this invention is explained according to drawing 5. The charge warehouse which is the gestalt of the 2nd operation changes the configuration of the fence in the gestalt of the 1st operation shown in drawing 1 thru/or drawing 4, gives the same sign to the same member as the member shown in drawing 1 thru/or drawing 4, and omits the explanation.

[0022] As shown in drawing 5, the fence 76 is stood up and formed in the direction which intersects perpendicularly on each shelf 5 in a lengthwise direction, i.e., the depth direction of housing 2, and a longitudinal direction, i.e., the depth direction of housing 2. A charged object is put on each space formed of fence 76a of a lengthwise direction, and lateral fence 76b, or each space formed by wall 2a of these fences and housing, and the object charged [these] is charged by the battery charger 7 arranged in the suitable direction put on the surroundings of it. Therefore, with the gestalt of the 2nd operation, like drawing 5, the battery charger 7 is arranged by the field which counters the door side of lateral fence 76b, and the inner back wall of housing 2 while it is arranged in a shelf 5, fence 76a, and the paries medialis orbitae of housing 2 along with each fence 76a of a lengthwise direction. In addition, the battery charger 7 shown according to the two-dot chain line shows what was prepared like paries-medialis-orbitae 2a of housing 2 and inner back wall 2b in drawing 3 among drawing 5. Moreover, on each fences 76a and 76b, the shielding object 9 shown in drawing 3 is embedded. If it is in the charge warehouse which is the gestalt of this 2nd operation, it can charge by the charge approach as the gestalt of the 1st operation that a charged object is the same, and the building envelope in a charge warehouse can be used effectively, and many charged objects can be charged.

[0023] Furthermore, the gestalt of operation of the 3rd of the charge warehouse concerning this invention is explained according to drawing 6. The charge warehouse which is the gestalt of the 3rd operation forms a battery charger 7 in inner base 2c of the housing 2 in the gestalt of the 1st operation shown in drawing 1 thru/or drawing 4, gives the same sign to the same member as the member shown in drawing 1 thru/or drawing 4, and, below, omits the explanation. The gestalt of this operation stands up and forms two fences 6 as shown in drawing 2 and drawing 3 in inner base 2c of housing 2, among these base 2c is used for it instead of a shelf 5. In addition, the battery charger 7 is formed also in paries-medialis-orbitae 2a and inner back wall 2b which are connected with inner base 2c as well as the gestalt of the 1st operation of a ***. Thus, if constituted, the building envelope of housing 2 can be used further effectively. Moreover, the large-sized battery charger 7 is formed in the inner base itself, without forming a fence 6, and you may enable it to charge large-sized electronic equipment.

[0024]

[Effect of the Invention] The charge warehouse concerning this invention possesses housing and a door, and at least one shelf which puts a charged object on the interior of housing is formed. The battery charger which charges to the charged object placed on said shelving and/or the inner base of said housing is formed in said shelf and/or said housing. The electrical and electric equipment is charged by non-contact by electromagnetic induction at said charged object which contained the power receiving side coil and the battery with said battery charger having a feed side coil. Since it can charge easily only by holding charged objects, such as various rechargeable batteries, in the interior of plurality and housing according to this charge warehouse, the battery charger of dedication can be eliminated to the rechargeable battery of various electronic equipment, and many exclusive battery chargers can be lessened substantially. Therefore, also from the point of effective use of the resource which poses a problem recently, the use of the charge warehouse of this invention is large.

[Translation done.]